ENCLOSURE (B) 9

EXPLANATION OF PILOT PLANT FOR CONTINUOUS VACUUM DISTILLATION

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LIST OF TABLES AND ILLUSTRATIONS

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I CAPACITY

Capacity is 10 kl/day for raw material.

II OPERATING METHOD

The raw material is transported into the pipe-still through the heat exchanger from the three feed tanks (volume 50 ton for each one) by the feed pump.

The quantity of charge is controlled at 700 liters per hour at the pressure of one kg/cm^2 by the controlling valve of the feed pump.

This pipe-still is heated by the injection of the heavy oil and the super-heated vapour of 5 atmospheres pressure and 600°C is used for flashing of the raw material into the fractionator.

The flashing temperature is about 340°C (calculated temperature) and the vacuum at the top of the fractionator reaches 15mm Hg by the three-step steam jet.

300 kg/hr of vapour at 10 atmospheres, and 17 kl/hr of water are needed for this three-step steam jet.

In this fractionator, four fractions, i.e., out first drop -250°C, out 250°C-280°C, out 280°C- 320°C- are separated. (Calculated temperature).

Scale of the Fractionator

Diameter..... 480Φ
Height..... 14,000Φ
Bubble plates..... 36

The first fraction is taken out from the top of the fractionator and transported into the first fraction tank (capacity 50 tons) through the condenser and the first cooler (volume 400 liters) by the feed pump of one kl/hr capacity.

The second and third fraction are taken out into the first and second stripping tower (each volume 200 liters) and transported into the second and third fraction tank (each volume 50 tons) through the second and third cooler (each volume 500 liters) by the feed pumps of one kl/hr capacity.

The residual oil is entered into the bottom tank (capacity 50 tons) through the bottom receiver (volume 500 liters) and the heat exchanger by the feed pump of 1.5 kl/hr capacity.

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SCALE OF THE PIPE-STILL

		Preheating Part	Heating Part
Coil	Diameter	3/4'	3/4'
	Length	64 m	85 m
Temperature		150°C	350°C
Pressure		1 kg/cm^2	1 kg/cm^2

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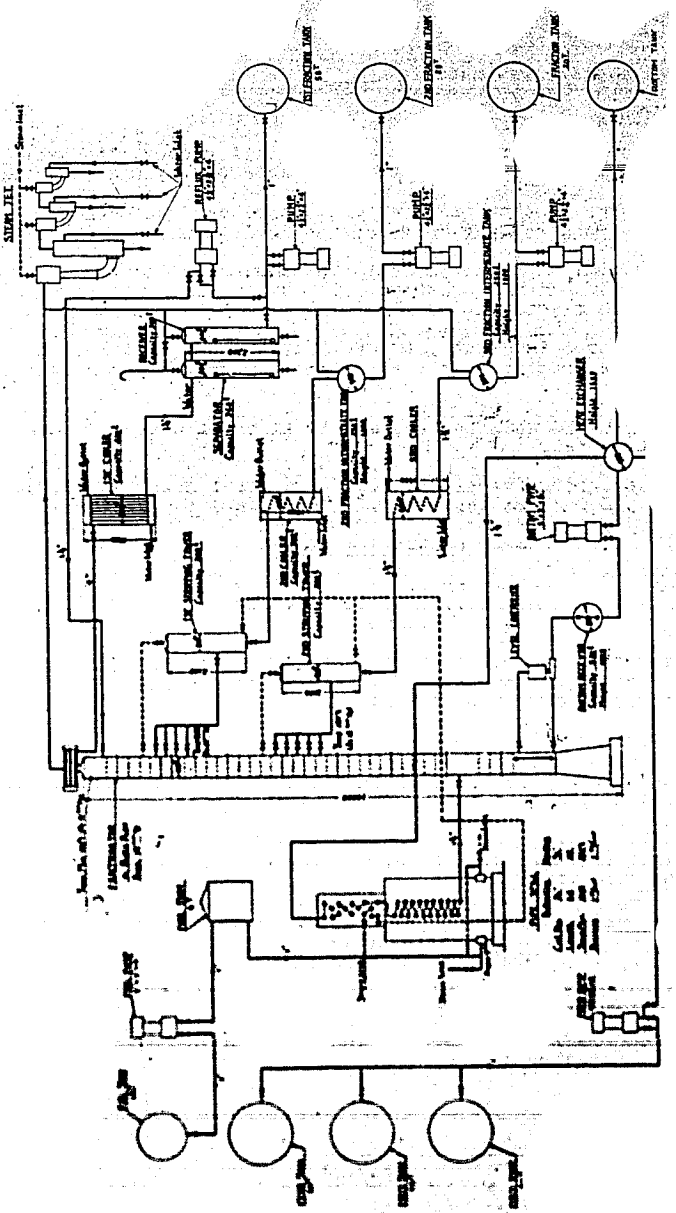

Figure 1(B)9

FLOW SHEET OF PILOT PLANT CONTINUOUS VACUUM DISTILLATION